

Application No. 10/540,071
Response dated March 25, 2009
Reply to Final Office Action of December 29, 2008

Docket No.: 20941/0211435-USO

LISTING OF CLAIMS

Please cancel claims 17-26 without prejudice.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Previously Presented): A process for producing metal oxide from a metal compound in which the metal compound is conveyed into a reactor with fluidized bed, heated there to a temperature of 650 to 1150°C by combustion of fuel, and metal oxide is generated, comprising introducing a first gas or gas mixture from below through a gas supply tube into a mixing chamber of the reactor located above the orifice region of the gas supply tube, the gas supply tube being at least partly surrounded by a stationary annular fluidized bed which is fluidized by supplying fluidizing gas, wherein the gas flowing through the gas supply tube entrains solids from the fluidized bed into the mixing chamber when passing through the upper orifice region of the gas supply tube, and adjusting the gas velocities of the first gas or gas mixture as well as of the fluidizing gas for the annular fluidized bed such that the Particle-Froude numbers in the gas supply tube lie between 1 and 100, in the annular fluidized bed between 0.02 and 2, and in the mixing chamber between 0.3 and 30.

Claim 2 (Previously Presented): The process as claimed in claim 1, wherein the Particle-Froude number in the gas supply tube lies between 1.15 and 20.

Claim 3 (Previously Presented): The process as claimed in claim 1 wherein the Particle-Froude number in the annular fluidized bed lies between 0.115 and 1.15.

Claim 4 (Previously Presented): The process as claimed in claim 1, wherein the Particle-Froude number in the mixing chamber lies between 0.37 and 3.7.

Claim 5 (Previously Presented): The process as claimed in claim 1, wherein the filling level of solids in the reactor is adjusted such that the annular fluidized bed extends beyond the upper orifice region of the gas supply tube and wherein solids are introduced into the first gas or gas mixture.

Claim 6 (Previously Presented): The process as claimed in claim 1, wherein the metal compound is aluminum hydroxide with a grain size of less than 100 μm .

Claim 7 (Previously Presented): The process as claimed in claim 1, wherein preheated gas containing oxygen is supplied to the reactor through the gas supply tube.

Claim 8 (Previously Presented): The process as claimed in claim 1, wherein gaseous and/or liquid fuel is introduced into the reactor through the gas supply tube.

Claim 9 (Previously Presented): The process as claimed in claim 1, wherein gaseous fuel and/or air is introduced into the lower region of the annular fluidized bed of the reactor.

Claim 10 (Previously Presented): The process as claimed in claim 1, wherein the pressure in the reactor lies between 0.8 and 10 bar.

Claim 11 (Previously Presented): The process as claimed in claim 1, wherein the solids are suspended, dried, preheated and/or partly calcined prior to the heating treatment in at least one preheating stage, wherein the preheating stage comprises a heat exchanger and a downstream separator.

Claim 12 (Previously Presented): The process as claimed in claim 11, wherein the heat exchanger is an annular-fluidized-bed heat exchanger comprising a second stationary fluidized bed and a second mixing chamber.

Claim 13 (Previously Presented): The process as claimed in claim 1, further comprising cooling the reactor by injecting water into the annular fluidized bed.

Claim 14 (Previously Presented): The process as claimed in claim 11, wherein after the heat treatment 0 to 100 % of the product entrained by the exhaust gas of the reactor is discharged via a separator into a preferably fluidizing-gas-operated mixing vessel, and a product mixture is generated with partly calcined solids.

Claim 15 (Previously Presented): The process as claimed in claim 1, wherein the product or product mixture is supplied to a cooling system comprising a plurality of cooling stages connected in series.

Claim 16 (Previously Presented): The process as claimed in claim 15, wherein the gas heated in the cooling stage is supplied to an upstream cooling stage, a preheating stage and/or the reactor.

Claims 17-26 (Cancelled)

Claim 27 (Previously Presented): The process as claimed in claim 1, wherein the metal compound comprises metal hydroxide or metal carbonate.

Claim 28 (Previously Presented): The process as claimed in claim 12, further comprising cooling the annular-fluidized-bed heat exchanger by injecting water into the annular fluidized bed.